REMARKS

This is intended as a full and complete response to the Office Action dated September 3, 2009, having a shortened statutory period for response extended one (1) month and set to expire on January 4, 2010. Please reconsider the claims pending in the application for reasons discussed below.

Claims 35-41, 43-48, 61-68 and 70-71 remain pending following entry of this response. Claims 49-56, 58-60, 73-82 and 84-85 have been canceled. Claims 35, 39-41, 48, 61, 64, 67-68 and 70-71 have been amended. Claims 87-107 have been added. Claims 87-89 correspond to the previously presented dependant claims of Claim 39. Claim 90 corresponds to the previously presented dependant claim of Claim 61. Claim 91 corresponds to the previously presented dependant claim of Claim 64. Claims 92-97 correspond to the previously presented dependant claims of Claim 48. Claims 98-102 correspond to the previously presented dependant claims of Claim 67. Claims 103-107 correspond to the previously presented dependant claims of Claim 70. Applicants submit that the amendments and new claims do not introduce new matter.

Further, Applicants are not conceding in this application that those amended (or canceled) claims are not patentable over the art cited by the Examiner, as the present claim amendments and cancellations are only for facilitating expeditious prosecution of the claimed subject matter. Applicants respectfully reserve the right to pursue these (pre-amended or canceled claims) and other claims in one or more continuations and/or divisional patent applications.

Claim Rejections - 35 U.S.C. § 103

Claims 35-41, 43-48, 61-68 and 70-71 are rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over *Heath, Jr et al.* (U.S. Patent No. 6,937,592, hereinafter, "*Heath Jr*") and *Heath et al.* (U.S. Patent No. 6,850,498, hereinafter, "*Heath*"). Applicants respectfully traverse this rejection.

The Examiner bears the initial burden of establishing a *prima facie* case of obviousness. See MPEP § 2141. Establishing a *prima facie* case of obviousness begins with first resolving the factual inquiries of *Graham v. John Deere Co.*, 383 U.S. 1 (1966). The factual inquiries are as follows:

(A) determining the scope and content of the prior art;

(B) ascertaining the differences between the claimed invention and the prior art;

(C) resolving the level of ordinary skill in the art; and

(D) considering any objective indicia of nonobviousness.

Once the *Graham* factual inquiries are resolved, the Examiner must determine whether the claimed invention would have been obvious to one of ordinary skill in the art.

Respectfully, Applicants submit that the Examiner has not properly characterized the teachings of the references and/or the claims at issue. Accordingly, a *prima facie* case of obviousness has not been established.

In rejecting claims 35, 39, 61 and 64, the Examiner refers to *Heath Jr* as teaching "spatially processing the first plurality of data symbol streams with a first plurality of steering vectors." Applicants respectfully submit, however, that while *Heath Jr* teaches spatial processing, it does not teach the use of steering vectors at all.

Claims 35, 39, 61 and 64 have been also amended to clearly specify that the first plurality of data symbol streams is spatially processed using the steered spatial multiplexing mode, and that the second plurality of data symbol streams is provided using the non-steered spatial multiplexing mode and not only in accordance to the non-steered spatial multiplexing mode.

For at least these reasons, Applicant submit claims 35, 39, 61 and 64, as well as their dependants, are allowable over the art of record and respectfully request withdrawal of these rejections.

In rejecting claims 40, 48, 67 and 70, the Examiner refers to *Heath Jr* as teaching "wherein the second spatial multiplexing mode is a non-steered spatial multiplexing mode" as recited in the claims. Applicants respectfully submit, however, that the Examiner has misconstrued the teaching of *Heath Jr* of "non-spatial multiplexing" as being equivalent to "non-steered spatial multiplexing" recited in the claims. Both the steered spatial multiplexing mode and the non-steered spatial multiplexing mode of the application comprise spatial multiplexing, but the steered spatial multiplexing mode also comprises spatial processing using steering vectors. The spatial multiplexing is present in every transmission mode supported in the application whether or not this transmission mode also comprises spatial processing.

It should be noted that the term spatial processing is associated with processing using, for example, the steering vectors and not with the spatial multiplexing. This is clearly specified in the Summary of the application (e.g. paragraphs [0006] and [0007]) where multiple spatial multiplexing modes are cited, where two spatial multiplexing modes do not comprise spatial processing but comprise spatial multiplexing:

> The multiple spatial multiplexing modes may include (1) a single-user steered mode that transmits multiple data streams on orthogonal spatial channels to a single receiver, (2) a single-user non-steered mode that transmits multiple data streams from multiple antennas to a single receiver without spatial processing at a transmitter, (3) a multi-user steered mode that transmits multiple data streams simultaneously to multiple receivers with spatial processing at a transmitter, and (4) a multi-user non-steered mode that transmits multiple data streams from multiple antennas (co-located or non co-located) without spatial processing at the transmitter(s) to receiver(s) having multiple antennas.

In addition, as described in paragraph [0058] of the present application, the non-steered spatial multiplexing mode may represent a transmission mode where different data streams are spatially multiplexed on multiple antennas without using the steering vectors for spatial processing:

> The single-user non-steered mode transmits N_S data symbol streams from N_T transmit antennas without any spatial processing at the

transmitter.

On the other hand, the non-spatial multiplexing in *Heath Jr* represents a transmission mode without multiplexing of different data streams into multiple antennas, but only one data stream is transmitted at a time. For example, this is illustrated in Fig. 8 where the non-spatial multiplexing unit 816 produces only one output data stream to be transmitted from one antenna 822. The optional transmission diversity unit 818 provides that the data stream from the unit 816 is being simultaneously transmitted from multiple antennas 822, which is different from the "non-steered spatial multiplexing" of the present application where different data streams are multiplexed to multiple transmit antennas. Therefore, "non-spatial multiplexing" of *Heath Jr* represents transmission without any spatial multiplexing, which is different from the "non-steered spatial multiplexing" recited in the claims that comprises spatial multiplexing of multiple data streams.

Claims 40, 48, 67 and 70 have been also amended to clearly specify that a first plurality of received symbol streams is processed using, and not only in accordance to, the steered spatial multiplexing mode, and that a second plurality of received symbol streams is processed using, and not only in accordance to, the non-steered spatial multiplexing mode. Furthermore, these claims are amended to recite "processing" instead of "spatially processing" in relation with the non-steered spatial multiplexing mode in order to avoid association of the non-steered spatial multiplexing mode with spatial processing.

For at least these reasons, Applicant submit claims 40, 48, 67 and 70, as well as their dependants, are allowable over the art of record and respectfully request withdrawal of this rejection.

Claims 49-56, 58-60, 73-82 and 84-85 are rejected under 35 U.S.C. § 103(a) as being unpatentable over *Heath Jr* in view of *Catreux et al.* (U.S. Patent No. 6,802,035, hereinafter, "*Catreux*"). However, these claims have been canceled. Therefore, Applicants respectfully request withdrawal of this rejection.

Conclusion

All objections and rejections having been addressed, it is respectfully submitted that this application is in condition for allowance and a Notice to that effect is earnestly solicited. If any points remain in issue that the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

Charge Statement: For this application, the Commissioner is hereby authorized to charge any required fees or credit any overpayment to Deposit Account 17-0026.

Respectfully submitted,
QUALCOMM Incorporated
Customer Number: **23696**

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By: /Ross L. Franks/
Ross L. Franks, Reg. No. 47,233
Tel. No.: (858) 845-1946

QUALCOMM Incorporated
Attn: Patent Department
5775 Morehouse Drive
San Diego, CA 92121-1714
Telephone: (858) 658-5787
Facsimile: (858) 658-2502